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This project was conducted to determine the conditions that make a satisfying study environment in colleges and universities and to relay the findings to those who design and manage educational spaces. The investigation focused upon the process of studying and its relation to environmental setting, and data was primarily gathered through site interviews at 24 institutions of higher learning in northern California. Six complementary questionnaires, consisting of open-ended and multiple choice items, were used for the interviews. These cover room studying, library studying general environment, library-residence comparison, and distractions. Other small scale investigations on related matters were also undertaken. The survey findings and recommendations are grouped according to specific study locations: (1) library reading areas, (2) dormitories, (3) cafeterias and lounges, (4) empty classrooms, and (5) outdoor areas. Findings make it clear that an effective study environment is as much a matter of administrative rules and educational programming as architecture. To reach librarians, residence hall managers, and others who administer educational spaces, the author has written a number of articles based on the study findings for professional journals. References to these articles are included in this report. The six questionnaires used in the site interviews are appended. (JB)

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The Ecology of Study Areas

Cooperative Research Project No. 6-1121

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1968

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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Preface

The study was made possible only by the active support and encouragement from librarians, deans of students, and housing officials. I am also indebted to the many students who filled out questionnaires and participated in our interviews. Rather than mention the individuals specifically, I would just like to give my thanks to the staff and students at the following colleges and universities: College of the Sequoias, American River, Cabrillo, Chabot, Foothill, Napa, Sacramento City, Sierra, and Yuba Colleges; Chico, Fresno, Hayward, Sacramento, San Francisco, San Jose, Sonoma, Southern Oregon, and Stanislaus State Colleges; University of the Pacific, University of San Francisco, and the Campuses of the University of California at Berkeley, Davis, and Santa Cruz.

Field interviewers and research assistants involved in the study were Constance and James Brace, Katie Dunlap, Anne Gibbs, Frank Becker Robert Gifford, Michael McNeill, Peggy and Severin Peterson, Joyce Thompson, and George Winter.

The study benefited appreciably from the excellent advice and consultation of Nancy Russo of Cornell University. Mr. Chester Neudling of the Office of Education was most encouraging throughout. Peggy Todd and Margaret Hill provided secretarial assistance.

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4. Statement of the Problem

This is an investigation of study environments in colleges and universities based on observations and interviews in places where studying occurs. Our focus is on the process of studying and its relations to environmental settings rather than upon the settings themselves. Although much of the material is directly concerned with libraries and dormitories, our focus remains upon the process rather than the institution. In this respect, our investigation differs from a study of the institutions themselves. Were we concerned with dormitories we would have to pay some attention to heating, lighting, friendship patterns, and student government.

In conducting our interviews in the study environments, we have followed a different procedure than many other investigators. The Community College Planning Group, for example, gave questionnaires to students in classrooms. We felt that the greater realism and relevance of the site interviews would compensate for the added difficulty and expense of obtaining the data. Furthermore, we have been interested in the self-selection among users of different sorts of study facilities. Some students prefer to study in the library while others avoid it at every opportunity. We wanted to find the advantages and disadvantages of these settings from the standpoint of the users themselves.

5. Objectives

The goal of this research was to learn the conditions that make for a satisfying study environment in the hopes of feeding this information back to people who design and manage educational spaces. Hundreds of millions of dollars are spent every year designing library reading areas, study halls, and other places where study takes place without much substantial information on effective study conditions.

On the basis of previous work on the study habits of college students (Community College Planning Group and Stoke, et al) we had some promising leads on locations that should be surveyed. We knew, for example, that between 60 and 80 per cent of studying takes place in the student's own room. A number of books, pamphlets, and articles, particularly those published by the Educational Facilities Laboratories, have been concerned with study conditions, but the observations were largely anecdotal and impressionistic. We hope in this study to evaluate many of the traditional assumptions about study conditions from the standpoint of user behavior.

6. Related Research

The best available material dealing with study environments is found in the series of pamphlets and monographs sponsored by the Educational Facilities Laboratories of New York City. Funded originally by the Ford Foundation, EFL has continued through the years to publish an eminently readable and well-illustrated series of publications that has been widely read and acclaimed by educators. The booklets most relevant to the present investigation are Bricks and Mortarboards, A Study on Studying, Study Carrels, College Students Live Here, and most recently, Dorms at Berkeley. Most of the material in these pamphlets is based on impressions and anecdote rather than systematic empirical study. By this I mean that the pamphlets have done an excellent job in examining educational programs from a journalistic standpoint but many of the ideas and assumptions remain unexamined and untested. As a case in point, we can use the sections relating to study carrels. Throughout the pamphlets there is a constant refrain that students prefer carrels and will use them when they are available, but when we examined the survey data that existed, the case for carrels did not seem to be very strong (Sommer and Peterson, 1967). However many useful leads and ideas can still be gained from the pamphlet series.

An excellent document although not easily obtainable is the monograph edited by Stoke et al.titled Student Reaction to Study

Facilities. This summarizes the results of surveys at four New England colleges. The information was to be used in designing more effective study conditions at a fifth college still in the planning stage.

Looking over library journals, one does not find much that is directly relevant to study conditions. There are many excellent articles dealing with specific aspects of the library environment such as lighting, acoustics, and shelving, but there has not been much from the standpoint of reader behavior. One exception is the study by Meier (1963) conducted in the University of Michigan libraries.

Perhaps because they are easily accessible to social science departments, dormitories have been heavily studied over the past decades. Both the Journal of College Student Personnel and Personnel and Guidance Journal contain many articles dealing with residence halls and there is now a newsletter "Student Housing Research" which deals specifically with residence hall living. Most of this work has been surveys concerned with satisfaction with the dorm environment, correlational studies relating housing to student grades, and sociometric studies of friendship patterns. More recently there have been several excellent books such as Sanford's The American College dealing with global aspects of the college environment but these have not been focused upon dormitories or study conditions in particular. Some excellent material based upon the case study

of a single dorm is the booklet Dorms at Berkeley by architects Van Der Ryn and Silverstein.

When going through the literature on study conditions, we could find virtually nothing about the use of cafeterias, empty classrooms, and outdoor areas as study places apart from occasional statements in the EFL pamphlets already mentioned.

7. Procedure

During the period 1964-1967 we contacted college librarians, deans of students, and college housing officers in Northern California and arranged visits. Cooperation was excellent and we were able to distribute questionnaires at five universities, nine four-year colleges, and eight two-year colleges. For the site visits, we relied upon six complementary questionnaires. In field research in social psychology, it has long been apparent that any single instrument is likely to overlook significant dimensions of the situation. At the outset we relied upon "open-ended" questions since we did not know all the relevant variables. The student was asked to write, in his own words, his reasons for studying where he was. When we found that most answers fell into a few major categories, we constructed multiple choice forms on which the student rated each aspect of the environment along four point scales. Frequently we used the same form in different settings, but in some situations (for example, outdoor studying) the forms had to be modified.

The questionnaires were distributed by research assistants under the supervision of the writer. In our library work, we first secured the permission of the librarian and then visited the various reading areas. Then a decision was made as to the particular questionnaires and the number of copies to be distributed. The field worker approached individual students in various parts of the library with the request, depending upon circumstances, that the questionnaires be filled out anonymously and handed back to the interviewer later in the day or left in a collection box at the exit counter. For the dormitory interviews we secured the permission of the local college housing officials and then visited individual rooms. The interviewer recorded how many people were present in the room, their location, and then interviewed each student individually. Those students who were reading outdoors, or those in cafeterias and lounges, were approached directly by the interviewer and asked to fill out a questionnaire.

Cooperation was very good since the relevance of the survey was apparent. We secured questionnaires from almost 5,000 students in library reading areas, over 1,000 in college residences, 500 in cafeterias, 100 in lounges, 150 in empty classrooms, and almost 500 students studying outdoors. In addition, several thousand dormitory residents at the University of California, Davis participated in related surveys.

The use of several parallel questionnaires (always with different

respondents--a person filled out only one questionnaire) meant that any single form was brief and could be distributed, filled out, and collected quickly and with minimal disturbance. At the top of the questionnaire the interviewer filled out the date, time, and place; at the bottom was space for the respondent to indicate whether he was a full time student, his class, and whether or not he smoked. Here are brief descriptions of the six questionnaires used in the study. The forms themselves are contained in the Appendix.

Form 66-10. Room Studying. After the interviewer recorded whether or not the student was studying and the student's location just prior to the interview, he asked the student to describe the advantages and disadvantages of studying in his room, the whereabouts of his roommate, and whether or not the roommate was studying.

Form 66-11. Library. This was a library form exclusively and consisted of two open-ended questions. The first asked the student why he chose to study in the library at that time, and the second why he selected that particular part of the library.

Form 66-12. General Environment. The student was asked to rate specific aspects of the setting (lighting, ventilation, privacy, etc.) along four point scales--excellent, satisfactory, minor improvement needed, or major improvement needed. If the student checked either of the later categories he was asked to describe the improvements that were needed.

Form 66-15. General Environment. This open-ended form consisted of a single question which asked the student to list the advantages and disadvantages of studying in that location. Unlike Form 66-11, this questionnaire requested information about disadvantages as well as advantages.

Form 66-16. Library-Residence Comparison. The student was asked to compare studying in the library with studying at his residence. For each item he indicated which of the two study places was better, or whether there was no difference.

Form 66-17. Distractions. On the basis of replies to the open-ended questions, we compiled a list of the most frequently mentioned distractions. The student was asked to rank the five items that most seriously affected his studying.

The six forms were regarded as complementary rather than equivalent. From the open-ended items we hoped to learn the most salient aspects of the setting--what stood out in the student's mind. With the multiple-choice forms, the student was presented with a list of specific items, many of which he would not have mentioned spontaneously.

What we have described thus far has been the main thrust of the study--the site interviews at 24 institutions of higher learning in Northern California. When a topic seemed promising, we frequently undertook small scale investigations on related matters. This resulted in several investigations of dormitories that focused

upon friendship patterns and student morale. The line of investigation of spatial behavior begun by the writer several years ago was also continued in the study location. The goal was to learn how the arrangement of people was affected by what they were doing as well as their relationship to one another. Most of this work was directly related to study conditions but some of it related to more general aspects of interpersonal behavior (Lott and Sommer, 1966; Norum, Russo, and Sommer, 1967; and Sommer, 1967). We also made a content analysis of 40 study manuals to gain some idea of studying as seen from the standpoint of educators and guidance counselors. From time to time, we conducted semantic analyses of various terms connected with studying. We also visited and surveyed several learning centers removed from college campuses to see what sort of studying took place there. One research assistant spent a week at the Bodega Marine Laboratory, another attended a workshop in interpersonal relations conducted by state college, and another interviewed teachers enrolled in a course on exceptional children held at a state hospital. In each setting, the students were asked to describe how their situation differed from on-campus learning (Todd and Sommer, 1967).

Our approach throughout was extensive rather than intensive. We wanted to survey all those places where studying took place with the belief that one cannot understand patterns of library or dormitory use without knowing what other study places are available.

Architects Van Der Ryn and Silverstein (1967) describe the situation at several Princeton dorms which had very inadequate study facilities but the students did not mind this at all. The explanation was that the students had excellent back-up study facilities close by on campus. Nor can one understand why students go to the library to study in the evenings without knowing something about study conditions in the dormitories and whether empty classrooms are kept open in the evenings.

To simplify the presentation of results, we will examine each study location separately. Section 8A will be devoted to library reading areas, Section 8B to dormitories, Section 8C to cafeterias and lounges, Section 8D to empty classrooms, and Section 8E to outdoor areas. Section 9 will describe the implications of these findings for people who design and manage educational spaces as well as pinpoint those areas in greatest need of further research.

8. Analyses of the Data and Findings

A. Libraries

a. Reasons for Studying in the Library

Form 66-11 was distributed to 1563 students at 16 colleges and universities. The student was asked why he was studying in the library rather than somewhere else, and then why he had chosen that particular spot. The responses were coded by a research assistant according to a prearranged list of categories. This

coding was highly reliable and the correlation between the responses placed in any category by three separate coders exceeded .90. The most common reason for studying in the library, given by more than half of the respondents, was the quiet. This was followed by the proximity or convenience of the library, the availability of reference material, the studious atmosphere, and the freedom from distractions. There was a pathetic quality to many of the responses scored in the proximity or convenience category. At several junior colleges, a sizeable number of students stated flatly, "It's the only place around here to study." Table 1 shows that very few students mentioned physical attributes of the library, such as the lighting, temperature, or carrels as reasons for reading there. As subsequent tables will indicate, this does not mean that these aspects of the library were deficient, but only that the readers come to the library for other reasons--primarily the quiet and the studious atmosphere.

Insert Table 1 about here

Question 2 asked the respondent why he selected that particular section or area within the library. The reasons were varied and many students could not supply a reason except for a vague mention of habit or accident. In rank order of frequency, the most common reasons were the availability of reference materials, quiet, privacy, and freedom from distractions. In group study rooms, the

major attraction was the possibility of studying together.

Form 66-15 asked the student to list the advantages and disadvantages of library study. This was distributed to 434 students at 7 colleges and universities. The major difference between these answers and those to 66-11 was that, when asked directly about the advantages of the library as a study place, half the students mentioned the availability of reference materials. Previously, only 25% of the respondents to 66-11 had mentioned the collection as a reason for coming to the library. It seems that a question about "advantages and disadvantages" involves a more abstract or theoretical assessment of the library. The student is not being asked the existential question about why he specifically came there <u>on this occasion</u>, so much as he is being asked "What is good about the library as a study place?" The availability of reference materials becomes more salient when the library is considered in an abstract rather than an existential sense since a large number of the readers were not--at the time they were interviewed--using the collection at all, but rather studying materials they had brought with them. With this one exception, the greater frequency with which reference materials were mentioned, the advantages of the library from the student's standpoint were the same as his reasons for coming there.

Except on two campuses where construction noise could be heard in the library, only a minority of the students mentioned disadvantages. The most common disadvantage, given by one out of eight students, was noise from other people.

b. Reaction to Specific Aspects of Library Environment

The open-ended questions had provided information on the most salient characteristics of the library. We felt that it would also be helpful to secure ratings of other aspects, less salient perhaps but nonetheless important from the standpoint of reader services. For example, very few students had mentioned the tables and chairs in the reading area during the open-ended survey. Was this because furniture is generally taken for granted or simply that it was satisfactory but not impressive? On the basis of the previous replies, we made a list of twenty-four items of library environment which included "physical aspects" such as lighting, ventilation and floor covering as well as more subjective attributes of privacy, study atmosphere, and possibilities for relaxing. Each respondent was asked to rate the items along four-point scales--excellent, satisfactory, needs minor improvement, or needs major improvement. Questionnaire 66-12 was completed by 1112 library users at 16 colleges and universities.

Insert Table 2 about here

Lighting was rated highest of all the items. Half the students rated it excellent, another 40% considered it satisfactory. This situation prevailed at fifteen of the sixteen schools. The exception was a small four-year college where the library was perceived by the students as a very inadequate study place on virtually all criteria.

Ventilation was generally considered satisfactory although one-fifth of the students felt that some improvement was needed. It was interesting that some of the newer libraries were not superior to the older buildings in regard to temperature. In some cases they were worse. The situation at three of the newest and best furnished junior college libraries is illustrative. At one of them, over one-third of the carrel users rated them as hot and stuffy. At another, a third of the students were dissatisfied with the temperature, but they were equally divided between complaints about heat and cold. At the third new library there were few complaints about heat, but 15% of the students complained about the cold. It is possible that this is a result of heating-cooling systems that do not prove up to the demands of open-plan buildings. Most of the older libraries had separate rooms divided by substantial walls rather than the area flow plan of the newer structures.

The furnishings and other aspects of the physical environment were generally regarded as satisfactory. The most favorable ratings were given at the newer junior colleges which had carpeting on the floors. Carpeting seemed the single item most associated with an overall favorable view of library reading areas.

More than half the students felt that some improvement was needed in snack facilities. Many students indicated a need for coffee, soft drinks, or food during study sessions. They felt that these could be located in a separate snack area or lounge. Further

support for these opinions came from interviews that we conducted with five hundred students who were studying in cafeterias and lounges. A major reason why these areas were selected for studying was the availability of snack facilities.

When one turns to the social-psychological aspects of the library, a somewhat different picture emerges. From one-third to one-half of the readers believed the library was deficient in quiet, privacy, and study atmosphere. This was more evident in the junior colleges than the universities. Although the junior college libraries were generally better in terms of furnishings, attractive surroundings, and carpeting (since the buildings tended to be newer than the university libraries), they were noisier places in which to read. The explanation is that the two reader populations are different in terms of motivation, maturity, and expectations. A sizeable number of the junior college students are in their late teens and will not continue their educations further. The university population includes graduate and professional students, and the students there are under greater pressure to achieve high grades. In contrast to many of the junior college libraries where the staff must constantly enforce discipline, the university students maintain the quiet themselves. There are no monitors policing the reading areas. Although the physical conditions of the library can provide soundproofing and attractive reader stations, it is the attitude and behavior of the readers themselves that will ultimately determine whether a library is a good reading place.

In a previous survey of dormitory accommodations (Sommer, in press), 598 students were asked to rate their residence halls as to quiet and privacy. The wording was identical to that used in Questionnaire 66-12 so it is possible to compare those results with the present ones. The dormitory survey took place over a three-year period and included apartments, barracks, high-rise buildings, and a modern cluster unit. The library was rated better in quiet but the residence was superior in privacy.

Summarizing the results from 66-12, one finds that the physical conditions of the library are generally satisfactory. The major improvements needed are in the areas of quiet, privacy, and possibilities for relaxing. These are social psychological characteristics which are only partially correctable by architectural means. Equally important are the administrative rules, policies, and attitudes that affect the behavior of readers. Architecture and policies interact in the readers' minds since, for example, carpeting not only provides an esthetically pleasing setting in which to read as well as a sound-muffling surface, but also imparts feelings of self-respect and self-worth. That carpeting is not the full solution is evident from the new junior college libraries which had more complaints about noise than the older university libraries without carpeting.

c. Library-Residence Comparison

Since previous studies (Community College Planning Center and

Stoke, et al.) have shown that most reading takes place in the student's own residence, it seemed important to make a direct comparison between the library and the student's residence. A questionnaire was constructed which contained most of the specific items used previously, but which asked the student to indicate whether (a) his residence was superior in that respect, (b) the library was superior in that respect, (c) there was no difference between the two, or (d) the item did not apply.

Form 66-16 was filled out by 1173 students in 11 colleges and universities. Table 3 shows that the library is perceived as better in terms of reference materials, study atmosphere, lighting, and noise. The student's residence is better in terms of possibilities for relaxing and snacking, privacy, comfortable furniture, and people moving around. Again we see that protection against noise which is better in the library does not necessarily mean greater privacy. As we shall see from other data too, it is protection against people walking by and other visual distractors that impart feelings of privacy.

Insert Table 3 about here

Since this investigation of library areas was one phase of a larger investigation into study facilities, we had available comparable ratings from 216 students who were studying in the residence halls at the time of the interview. The ratings secured

in the dormitories stand in marked contrast to those secured in the library, even though both groups filled out identical questionnaires. Two-thirds of those interviewed in the library felt it was easier to concentrate there, but the percentage fell to one-third of those interviewed in the dormitories. Almost three-quarters of those interviewed in the library felt that the study atmosphere was better there, but this fell to less than half of those interviewed in the dormitories. The marked differences in the responses in Table 4 as well as the direction of the differences (the library studiers are always more favorable to the library, the dormitory studiers are more favorable towards the dormitory) makes it evident that we are dealing with <u>two different self-selected populations</u>. Those who do their reading in the library feel that it is a superior work place, but those who study at home feel the same way about their residence. Students have individual needs when it comes to reading areas. Some like to lounge around in their underwear and turn on the radio, while others need to be away from all other people in the library stacks. There is no single study environment that will meet the needs of all individuals.

Insert Table 4 about here

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d. Distractions in the Library

As we have seen, most readers did not mention disadvantages of library study when asked this in a general way. We felt that

it would be useful to focus specifically on distractions since the other questionnaires dealt mainly with positive features--the reasons why people came to the library. On the basis of the replies we had collected, we drew up a list of what appeared to be the major sources of distraction for library readers. This was distributed to 279 people at 7 colleges and universities. Each person was asked to rank the top five distractions in his present location. This procedure enabled us to determine the single most distracting element for each reader as well as less important sources of distraction.

Table 5 shows that the movement of people in and out was the top distraction for the greatest number of readers. This was followed by other people talking, wandering thoughts, other sources of noise, and the presence of friends nearby. Roughly the same picture emerges if we look at all items checked (regardless of whether they were ranked 1, 2, or 5) except that people-watching becomes the fourth most significant source of distraction. The results here parallel those found previously (Sommer, 1966) and demonstrate the need to protect readers against visual intrusions as well as auditory ones.

Insert Table 5 about here

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e. Carrels

In visiting various libraries, we found great differences in the sorts of carrels provided. Some were no more than small tables

partitioned at the sides while others were elaborate, specially designed stations equipped with storage facilities and assigned to students for prescribed periods. At Chabot College, for example, there is a specially designed carrel, which has been described in several articles, consisting of a wooden table set on metal legs which can be bolted to other carrels either back-to-back or side-by-side in almost any formation. There are also vast differences between tables and chairs from one campus to another. One reading room contained the traditional dark wooden tables accommodating 16-24 people while another relied mainly upon small white tables designed for 2 or 4 individuals. It is as hazardous to consider all tables together as it is all carrels.

Unfortunately, the resources available for our study did not permit a detailed analysis of the different sorts of tables or carrels available. The best we could do was compare the over-all ratings of students using the carrels with those from students in other parts of the library. Since carrels generally constitute a small percentage of the reading area, our sample of carrel users is smaller than that of readers in other areas.

Probably the most relevant responses are those to Question 2 of form 66-11 which asks the student why he chose to study in that particular part of the library. Table 6 shows large differences between carrel users and other students. The importance of protection against visual distractions is evident. Half the carrel

users mention this as a reason for coming to the library, compared to 14% of the students in other areas. The quest for privacy and quiet are also more evident among carrel readers. Fewer carrel users are interested in proximity to reference materials or friends, or the convenience of their location. Overall, one sees the carrel users more motivated than other readers by a desire for privacy and seclusion.

Insert Table 6 about here

When it comes to rating specific aspects of the library environment, one does not find too many differences between carrel users and other students. This is not surprising since the item deals with ratings of the library in toto rather than the student's immediate location. However, compared to carrel users, the other students were less satisfied with the amount of privacy they have as well as possibilities for relaxing. Eighty percent of the carrel users rated privacy as good or excellent compared to only 56% of the students in other areas. Carrel users are bothered by virtually the same things that affect other readers. They are somewhat more distracted by people coming in and out and less concerned than other readers with the presence of friends nearby. It appears that the carrels remove a person from the temptation to talk to friends but not from the sight of people coming and going.

Finally, we can turn to the library-residence comparison made in questionnaire 66-16. Compared to students in other areas, carrel users are more favorable towards the library in regards to noise, movement, privacy, and ease of concentration. Students in other areas give higher ratings to the library in terms of space to spread out materials, lighting, temperature, and ventilation. At several of the schools the carrels were regarded as stuffy and somewhat cramped. This was not a universal attribute of carrels but it did occur to a significant extent at several schools. The implication is clear that there can be poor carrels as well as good carrels, and it is necessary to learn the distinguishing features of each. On the basis of our observations, it is in the areas of ventilation and limited writing space that improvement is needed.

B. Dormitories

With the cooperation of the appropriate college housing officers, we were able to survey dormitories at 5 universities, 5 state colleges, and 1 junior college. Again our method was to approach students actually in the dormitories. With the prior permission of the housing officials, the student hall government, or other appropriate authorities, the interviewer would visit the dormitory at a specified time of the day and undertake a room by room survey among the residents. The method was cross sectional rather than longitudinal. We were interested in whether or not

the student was studying at that moment, why he chose to study there rather than the library or other study place, and why he selected the particular location (e.g. the desk or the bed or the floor) for his studying. We also asked the whereabouts of his roommate and whether or not he was studying. Occasionally we administered prepared forms such as the library-residence comparison (66-16) or the environmental rating form (66-12) described earlier where the student was asked to rate specific aspects of the dorm environment or, with 66-16, to compare dorm study with library study.

We divided living accommodations into double rooms, single rooms, and apartments. As could be expected, the vast majority of students we interviewed occupied standard double rooms located on both sides of a long corridor. There were very few dorms that provided single rooms for undergraduate students. Generally when this occurred, it was the result of a temporary situation (Summer session) or the student's roommate leaving school. Several single room dormitories had been included in our attitude surveys but these were generally unusual and temporary situations such as a converted army barracks on one university campus. We were unable to survey any permanent single room dormitory such as exists on, for example, the Harvard or Princeton Campus. Our resources simply did not permit us to travel outside our immediate area.

The writer's interest in dormitories predates the present project by several years. During this time, the writer and his

students undertook several studies of dorm use. One such study (Sommer, in press) compared student attitudes towards four different sorts of residence halls--apartments, cluster units around a courtyard, high rise buildings, and reconverted barracks. The apartment units were very satisfactory in terms of the study arrangements, amount of living space, quiet and privacy, but weak in terms of informal social contacts, school spirit, and organized activities. Because of the distance from campus, students in the apartments felt isolated from the rest of the campus. The small cluster units were most satisfactory in terms of social relationships, but the four bed suites provided less privacy than the two bed suites. The temporary buildings were best of all in terms of privacy since they contained single rooms. To these students at least, privacy was a matter of visual barriers since the barracks were grossly inadequate in soundproofing. A follow up study was undertaken one year later with the former occupants of these barracks. Most of these students now occupied double rooms in more modern substantial barracks. They were more satisfied with the heating, lighting, soundproofing, and air conditioning in the new barracks but they had far less privacy than they had in the older barracks with the single rooms. The high rise structures were frequently described as impersonal, institutional, and boxlike; social relationships within them were not as satisfactory as in the cluster units. These results and their implications are discussed in detail elsewhere

(Sommer, in press). We have extended the study in several ways. We have added another high-rise dormitory and a private apartment-residence hall to the sample. The private residence hall is a comparatively new development at American universities--designed specifically for students but with many amenities such as swimming pools and catered meals not found in university halls. The students we interviewed were very pleased with the amenities but there was a loss of identification with the campus at large, the residence hall, and even with the student's own floor that was best expressed in the phrase "apartment centeredness." This seemed an interesting analogue to the anomie or separation of urban apartment life that deserves further exploration, particularly since these private apartment complexes are being built in increasing numbers on university campuses throughout the country.

Now let us examine the results of the dorm interviews we conducted. The data are both observational and interview, since we took into account what the person was doing at the moment of the interview as well as his location, whether his roommate was present or absent, as well as his opinions about his study situation.

In all the living units, 60% of those students who were alone were studying at the time of the interview. The presence of another student in the room had more effect in a single than a double room where the other person was generally a roommate. The situation in apartments is more complicated since another person could be

physically present in an apartment but not in the same room. Although physical presence of another person has some affect, the more important consideration is what that person is doing. Table 7 shows that when a student's roommate in a double room is present and studying, the odds are three out of four that he will be studying himself. The ratio drops to one in three if the roommate is present and <u>not</u> studying. Thus we see that a person is more likely to study when his roommate is physically present and studying than when the roommate is away and he has the room to himself. The same trend is even more marked in apartments where three out of four students are studying themselves if the roommate is present and studying, but only one in six is studying if his roommate is in the same room and not studying

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Insert Table 7 about here

Zajonc (1965) has suggested that physical isolation facilitates studying. This would lead to the prediction that there would be more studying in double rooms and apartments when the roommate is away than when he is present. However this conclusion is not supported by our data. The proportion of studiers was about the same in cases where the roommate was present as when he was absent. This is shown in Table 8 where none of the correlations between a student's behavior (studying or not studying) and whether or not his roommate was physically present were significant. On the other hand, <u>all</u> the correlations between a roommate's behavior (studying

or not studying) and what his roommate was doing at the time (studying or not studying) were positive and statistically reliable. It is evident that it is not so much the physical presence of the roommate that matters but what the roommate is doing at the time.

Insert Table 8 about here

Although there is a correlation between the activities of roommates, this does not necessarily prove a causal connection. It seems reasonable that one roommate's actions should affect the other, but outside influences such as examination schedules may affect both people simultaneously. Some control over outside influences can be obtained by examining the situation in apartments where a roommate may be in another room. We find that when both roommates are in the same room, the correlation between their activities (studying or not studying) is .56. However, when one of the roommates is in another room of the apartment, the correlation between their activities drops to .33. This gives further support to the conclusion that it is not so much the roommate's presence that is important but whether or not he is studying. Perhaps this conclusion is obvious but it does seem important to make it explicit. When one student is studying, this exerts a facilitative effect on his roommate's likelihood of studying. In our library surveys (Sommer, 1966) many students reported that the presence of other people studying kept them at their books longer.

Each person was asked the advantages and disadvantages of his present study location. The similarities between the reasons mentioned in the various living arrangements are more significant than the differences. Because of the greater variety of furniture in the apartments, particularly the availability of easy chairs and sofas, fewer students study at their desks. Students in single rooms were less bothered by noise than those in double rooms or apartments. Otherwise the advantages of studying at home were the same in single rooms, double rooms, and apartments. One explanation is that many students waited until their roommates were away before they began studying. Major advantages of studying in ones residence are the quiet, possibilities for relaxing, and convenience. Major disadvantages are the noise, temptation to play the radio, phone other people, etc.

We turn next to the student's location within the room. In double and single rooms at the time of the interview, about forty percent of the students were at their desks, another forty percent on their beds, and the remainder on the floor, standing up, or in other locations. However, the percentage of <u>studiers</u> at each location varied greatly. About four-fifths of those at their desks were studying, compared to about half those on their beds, a smaller percentage of those standing or sitting on the floor. The implication is that students are at their desk specifically to study, but other locations, particularly in apartments, are also used for

studying by many students. Many educators attempt to discourage students from studying on their beds, easy chairs, or other soft furniture. However, we found no difference between the grade point averages of those students who studied at their desks and those who study on their beds (Gifford and Sommer, in press). Students worked at their desks because they felt this was good for study, well lit, and improved their concentration. On the negative side, the desk with a small chair was frequently uncomfortable and didn't let the person relax. The bed was used for studying because of its comfort, but they bore the risk of falling asleep. The easy chair or couch was used for studying by many students in apartments because of its comfort and good lighting, but also had the risk of falling asleep and a lack of space to spread out materials.

C. Cafeterias and Lounges

During the visits to the various campuses, our interviewers found many students reading in cafeterias and lounges. A cafeteria was defined as a setting where food was served or available to be eaten on the premises, and a lounge was typically a room with amenities such as carpets, soft furniture, couches, pictures on the walls, occasionally music, which was designed for no specific purpose other than relaxation, conversation, and light reading. The lounges were located in student union buildings, dormitories and fraternity houses and occasionally in classroom buildings. The interviews took place at various hours of the day and evening.

Questionnaire 66-15 was distributed to 444 students studying in cafeterias at 11 different schools. The reasons most frequently mentioned for studying in a cafeteria were the possibilities of snacking, the convenient location, the possibility of being near or with friends, the stimulation from the activity and background noise (many students contrasted the cafeteria environment with the tomblike library areas), being able to smoke, relax, and be comfortable. Those students who described the cafeteria as quiet invariably mentioned that this was relative to other settings, particularly a noisy dormitory room. The disadvantages of studying in a cafeteria were noise from both human and non-human sources, as well as the distractions from people coming and going.

Form 66-15 was administered to 55 people who were studying in lounges on 11 different campuses. No special effort had been made to secure lounge studiers; they were only approached incidental to the other interviews. A major reason for studying in a lounge, given by almost half the respondents, was the possibility of relaxing and being comfortable--generally attributed to the soft stuffed furniture. Other reasons were the presence of friends, some background noise or activity--which was not, however, as distracting as the student's own room, as well as the convenient location of the lounge. The most common distractions were noise and the movement of people in and out.

Several of the writer's students had made case studies of

lounge and cafeteria areas on this campus. Each student spent considerable time in, for example, the music listening room or the snack bar observing what went on and interviewing the people present. From this work as well as the project questionnaires, it became apparent that lounges and cafeterias serve as study areas for many students. Some students want to be near snack facilities while they read and there seems no pedagogical reason against this. In our library interviews, the majority of the students wanted snack facilities available. The writer himself always works with a cup of coffee within hands reach. On this campus a large cafeteria adjacent to the dormitories has been opened for evening study as a result of student petitions. It is a popular study place and appears to fill the need for an informal setting close to the dorms where group studying can take place. The occasional conversations at the individual tables are not considered unduly distracting by the self-selected population of cafeteria studiers. Of course those who object to the noise can go to the library, but many students find that the level of background noise and activity in a cafeteria reduces the distracting value of stimuli around them.

We have made only a small beginning in surveying studying in cafeterias and lounges. Much more remains to be done, particularly in finding ways to improve study conditions. One might consider the use of dividers or partitions for the large areas, or moving the tables and chairs farther apart during study hours, or segregating

smoking and non-smoking areas. The important point is that a lot of studying does take place in cafeterias and lounges as they presently exist and this can tell us something about student needs. There are many students who like to snack while they study. There are also many who appreciate the soft comfortable furniture of the lounges which they contrast with the hard, uncomfortable chairs in the library and residence halls.

D. Empty Classrooms

The first series of interviews all took place on the writer's own campus in a classroom building that was made available for evening studying. We were immediately struck by the territorial behavior of the students. Even though a room contained 40 chairs, one generally found only a single student or pair of friends in the room. A seminar room which had several rectangular tables generally attracted a larger number of students who located themselves so as to minimize eye contact. The spatial arrangements here were similar to those we found in the library reading areas (Sommer, 1966). Using Questionnaire 66-15, we asked each student to indicate the advantages and disadvantages of classrooms as study places. Most students found the classrooms to be quiet, private, and free from distractions. In each case, the number finding the classrooms quiet and private far exceeded the number holding the same opinion about the library or even their own residence!

On Form 66-12 the students were asked to rate specific items in the classroom environment. In most respects, the "private classrooms," for that is what they were, were superior to all other settings. Compared to the library, the empty classrooms were considered superior in quiet, privacy, ease of concentration, and study atmosphere. The classrooms were also better for group studying, possibilities of relaxing, smoking, and snacking. The hallway of the classroom building contained a bank of food vending machines which were heavily used by evening studiers.

The implications of these results are apparent. Empty classrooms make very good study places during the evening hours. Yet we are faced with a situation that only a few individuals are getting the benefit of these rooms. We found the same territorial behavior described by Stoke who observed that the first student in the room kept others away through cold stares and studied hostility. The major exception to this pattern occurred in the seminar rooms which have several long tables. In the evenings these are preferred study places because students can spread out their belongings. Even though the rooms are smaller than traditional classrooms, they accommodate more students than the straight row rooms which have only a single desk and many uncomfortable chairs bolted together. Except for those studying together, students in the seminar rooms arrange themselves so as to minimize eye contact. Sometimes they separate the tables and face different walls. During

exams when masses of students are feverishly cramming and virtually every seat in the library is occupied, an individual's hold over an entire classroom is not respected. In a related investigation of cramming, we interviewed many of these students during exam week. The average length of each study session in the empty classrooms was between two and three hours. It was apparent that the rooms were being used for serious rather than casual studying.

All of the preceding interviews and questionnaires were obtained in a building that consisted almost entirely of classrooms. Virtually all rooms in this building were "general purpose" and room scheduling was handled by the Registrars Office. A room might accommodate a history class at 8:00 a.m., a zoology class at 9:00, a philosophy class at 10:00 and so on. None of these rooms was assigned exclusively to a particular department.

We turn next to the study conditions in specialized academic buildings such as engineering, chemistry, fine arts, medicine and veterinary medicine, and so on. Although none of these buildings is officially classed as "general study space" in the way that the Classroom Building is in the evenings, students find their way into these buildings and use them for studying. Most frequently these are students who are majors or doing graduate work in the particular subject but occasionally one finds liberal arts students searching for a quiet and private study location. The explanation may be proximity--as with the medical school library which is located close

to a dormitory complex and used by some undergraduates for evening study on a regular basis. At other times a good study place in an obscure building is "discovered" by an undergraduate and remains his special secret. One student describes his reasons for studying in the geology lab as follows:

> I had geology here last spring and came here to study the rocks and liked the room. Now I come here whenever I am studying for an exam. . . it's very quiet and seldom occupied. I like to use the chalk board while studying and I don't like to bother people.

However, most users of the specialized areas have some connection to the building itself. Many departments actively discourage non-majors from using their facilities. In a few cases, we found buildings locked in the evening although some students and faculty were inside working. It was apparent that the departments had issued keys to those they wanted inside.

To round out our survey of campus study places, we interviewed all available students in specialized academic buildings during the last week of January, 1968. Between the hours of 7 and 9 p.m., a research assistant visited each building and interviewed all available residents. The few buildings that were locked were excluded from the survey. There was a great diversity of places and people,

much wider than what we found in other study locations. The respondents ran the gamut from design students using the textiles laboratory to engineering students working in the machine shop. More than half of the 107 people interviewed were graduate or professional students, and most of the remainder were upper division students. Only 10% of the respondents were lower division students. It is apparent that these specialized areas draw a different population than the general study places such as the library, dorm lounges, and general classrooms. These students are more advanced in their studies, older, and generally have some specific connection with the host department.

Each respondent filled out Questionnaire 66-15 which asked the advantages and disadvantages of his study location. The most common reason for studying there was the availability of materials, equipment, or other facilities. Most frequently these answers dealt with specific items of hardware--machines, photographic equipment, or chemicals--but it was also common to refer to the student's personal materials such as his books, research logs, and reference works. A large number of these students had assigned space in the building--something that was rarely true in the other study locations and it was possible for them to leave their belongings in the building.

Over half of the respondents mentioned the quiet as another reason for studying in these buildings. There were very few people

moving about and most everybody stayed where he belonged--in his own laboratory or office. A few undergraduates described these specialized buildings as lonely or spooky in the evenings and said they felt more comfortable in the library where there were more undergraduates around.

The specialized nature of the buildings contributed to the development of a graduate student culture. Many respondents said they liked to work in the building because there were others around who shared their interests and who could help with difficult problems. For the first time in our survey, there were a few students who said the availability of staff offices--people to whom they could go for advice--was a factor in selecting that study location:

> Most of the other graduate students study in this building. We have the opportunity to discuss any problems with each other whenever we encounter a problem. Sometimes a prof is around, and if a problem comes up, I can talk to him.

E. Outdoor Areas

On many of the campuses, we observed some people studying outdoors. Since very little had been written about outdoor study spaces--they were not even mentioned in the booklet "A Study on Studying"--we felt that even a preliminary investigation would

be worthwhile. Questionnaire 66-15 was administered to 342 students at 18 different campuses who were studying outdoors. None of these sessions took place on rainy or snowy days or when there was excessive wind. One reason for this was that few students study outdoors during inclement weather. It wasn't always sunny, particularly in the Bay Area schools where there are many foggy days, but it was never very unpleasant outside.

The most common reason for studying outdoors, given by about half the students, was the pleasantness of the surroundings--the trees, flowers, birds, and green grass. The outdoors was a welcome change from a cramped dormitory room or stuffy library carrel. The second most common reason was proximity to classes or other activities. When a student had a free hour between classes, and there wasn't enough time to go home, or to get settled in the library, the outdoors was inviting. The next most common reason was either the warmth of the sun or the cool shade of a tree. A smaller number of students mentioned fresh air and breezes outside. In our interviews in libraries, dormitories, and empty classrooms, the quest for quiet was <u>the</u> overriding consideration, but this was mentioned by only one in five students reading on the lawn.

Some of the items that were <u>not</u> mentioned are as significant as those that were. Judging from the passionate critiques of artificial lighting in buildings and the vociferous condemnation of windowless offices, one might suppose that students read outdoors because they prefer natural light. Not so. Natural light was

mentioned as an advantage of outdoor study by 1% of the students. Another incorrect assumption was that people work outdoors because they would have more space to spread out belongings. This also was mentioned by fewer than 1% of the students. A student doesn't spread out his belongings outdoors (a) to avoid the appearance of littering and (b) to keep the wind from snatching them away. It is an interesting paradox that a student has more working space at a library table or dormitory desk than in the "spacious" outdoors.

A final omission that seems significant is that only 1 of the 342 students mentioned habit as a reason for studying outside. Quite a few students mentioned spontaneously that they worked outside when they had light reading or reviewing to do, but for serious study they stayed indoors. Further support for this interpretation is that only one respondent mentioned the unavailability of reference materials as a disadvantage of studying outside.

The distraction questionnaire (66-17) was modified so that it would be suitable for use outdoors. It was administered to 180 students studying outdoors at 10 colleges and universities. The major sources of distractions outdoors are virtually identical with those indoors. Table 9 shows that the most frequent sources are people talking or walking by, and wandering thoughts. Proximity to friends or other people is also a common distractor. The similarities between indoor and outdoor distractions are more impressive than the differences.

Insert Table 9 about here

Table 10 summarizes the results obtained using Questionnaire 66-15 in the various study locations. Since this was a general open-ended question about the advantages and disadvantages of the location it could be used without modification indoors and outdoors and in cafeterias as well as libraries and dormitories. It is evident from the table that study locations differ markedly in how they are perceived by their occupants. People go to the library for the quiet and the availability of materials. They study in their residence for quiet, the possibility of relaxing, and convenience. The cafeteria is used because of the possibility of snacking, convenience, and being with friends. Lounges are preferred because one can study comfortably and they are quiet compared to student's own room. Empty classrooms left open in the evening provide the most quiet, fewest distractions, and most privacy of any of the settings. However, the role of territorial behavior in keeping classrooms as individual study places must be understood. The specialized classrooms and laboratories attract mainly majors and graduate students who make use of the specialized facilities. Although this practice is not encouraged by the host departments, some undergraduates also study there because of the quiet and privacy. Outdoor areas are preferred because of the attractive surroundings, the sun, fresh air, and convenient location.

Insert Table 10 about here

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9. Conclusions and Suggestions

Our findings make it clear that an effective study environment is as much a matter of administrative rules and educational programming as architecture. Whether empty classrooms and cafeterias are available for evening study varies greatly from one campus to another. On my own campus, a large cafeteria adjacent to the dormitories had been, up until a few years ago, opened for evening study only during exam time. The students then petitioned the administration to have the cafeteria kept open throughout the year. The request was granted and the cafeteria proved to be a very popular study place. However, a year ago a private firm was made responsible for campus food service and they closed most of the cafeterias for evening study. Such variation also characterizes vacant classrooms. A few years ago on this campus classrooms were made available for evening study only during exam week. Recently a small number of classrooms has been kept open throughout the year. The students have requested that the number of classrooms and the hours that they remain open should be increased. It is evident that in many cases the maintenance of adequate study facilities is as much a problem of making efficient use of available facilities as of building new ones. It is shortsighted to consider any single part of the university environment in isolation. One cannot meaningfully understand the role that library study halls play on campus without taking into account the availability of study facilities

in the dorms, lounges, and other campus areas.

It is not easy to summarize all the findings of surveys and observations involving almost 10,000 individuals in a variety of settings. The most feasible solution seems to be grouping the findings and recommendations according to study location.

A. Libraries

It is futile and economically wasteful to search for the "ideal reading area" with the hope that this will satisfy all patrons. There is no single reading station--whether it is a carrel or lounge chair in a carpeted area--that will satisfy the needs of everyone. The only feasible solution is to provide a variety of reading spaces which will differ in important respects and let users discover the areas most suitable for them personally.

Much more research is needed on the design as well as use of study carrels. There are poor carrels just as there are good carrels and we know very little about what differentiates one from the other. It seems clear that carrels select a particular sort of user--someone who is particularly concerned with privacy and keeping down visual distractions. There are some problems in existing carrels with ventilation and limited writing space but these can be remedied by better design. There are also many students who prefer open tables to individual carrels. An inexpensive and imminently feasible approach to the problem can involve the

use of portable partitions and dividers between reader stations that can be raised or lowered according to the reader's preferences.

There are some students who like to be with people when they read, even though direct eye contact is avoided. Most of the reported distractions came from human sources rather than physical aspects of the environment such as ventilation and lighting. The student culture prevailing on a given campus is as important in creating a proper study atmosphere as the architecture of the library or the actions of the library staff. The libraries we surveyed did not have many areas suitable for group studying.

The libraries we visited were considered by their patrons to be satisfactory in lighting, ventilation, general design, and furnishings, but in need of improvement in quiet and privacy. Students generally go to the library for the quiet and studious atmosphere that is not available in their residence hall as well as the availability of reference materials.

B. Dormitories

Building type has a considerable influence on student attitudes. Apartment units are satisfactory in study arrangements, quiet and privacy, but are weak in informal social contact, school spirit, and organized activities. Because of their distance from campus, students in apartments downtown feel isolated from the rest of the campus. The small cluster dorms containing 40-50

students per house were the most satisfactory of the units we surveyed in terms of social relationships. The four-bed suites were less satisfactory in terms of privacy than the two-man suites. Buildings with single rooms were considered best of all in terms of privacy. High rise dorms were frequently considered impersonal, institutional, and box-like; social relations within them were not as satisfying to students as in the cluster units. Graduate students living in college housing are less gregarious and group-centered than undergraduates.

In the traditional double room, most study takes place at the student's desk although a sizeable amount occurs on the bed. There is no difference in grade point average between those students who study on their beds and those who study at their desks. There is nothing in our data to support frequent admonitions against studying on the bed. In apartments or suites which contain easy chairs or couches, the desk fell to third place as a locus for study. Many students felt that the straight-back hard wooden chair was uncomfortable for extended study periods.

A student is less affected by the presence of his roommate than by what the roommate is doing at the time. A student is more likely to be studying if his roommate is present and studying than if his roommate is away from the room. From the student's standpoint, the advantages of studying in his room are the quiet, possibilities for relaxing, and convenience. Major disadvantages are the noise, temptation to play the radio, and so forth.

Privacy in dormitory living seems more a matter of visual barriers than soundproofing. Of the dormitories we surveyed, those which afforded greatest privacy had abysmal soundproofing but they had single rooms. Later when these same students moved to more substantial dormitories with better soundproofing but with double rooms they had less privacy than they had before. In dormitories, students can adapt to noise by ignoring it or creating a sound barrier of their own but it is more difficult to scotomize a physically present roommate.

C. Cafeterias and Lounges

On some campuses, cafeterias are heavily used by studiers between meals and in the evenings. This is largely a matter of administrative regulations. We have found other campuses where the cafeterias were closed to students at these same hours. Students like to study in cafeterias because of the possibility of snacking, conversing, group study, and the stimulation resulting from the background activity. Lounges are preferred because they have soft comfortable furniture and a student can work with friends in a relatively pleasant, quiet setting. It became evident throughout the interviews that many students prefer to study where there is soft comfortable furniture as well as snacking facilities nearby. More attention needs to be given by college administrators to making available unused areas such as cafeterias, lounges, and empty

classrooms for individual and group studying. It is as much a matter of making better use of what is available than of designing additional study halls. In this respect the material in this report should be of as much interest to space managers and educators as to designers.

D. Empty Classrooms

Empty classrooms left open in the evenings make excellent study places. Those we surveyed on this campus were rated higher in quiet, privacy, and study atmosphere than the library or the student's own residence. The major problems are largely administrative--insufficient numbers of empty classrooms kept open in the evening--and territorial behavior in that only a single student or a pair could be accommodated in a room. The possibilities of using portable dividers or partitions as suggested by Stoke should be explored. Seminar rooms with long tables generally accommodated more students in evening study than traditional classrooms. The students in the seminar rooms, except for those studying together, generally arranged themselves so as to minimize eye contact. The empty classrooms are generally used for serious or "hard" study in contrast to, for example, the outdoor areas which are used for casual study. The availability of snacking facilities was another reason why the classrooms were considered desirable study places.

Interviews were also held in laboratories and specialized academic buildings such as engineering, natural science, and fine arts which were kept open in the evenings. Unlike the general classroom buildings, these attracted mainly graduate students and majors in the particular department who were there specifically to use the facilities. However the availability of quiet study places attracted some undergraduates and non-majors who made use of them on a regular basis. These specialized buildings foster a sense of community among the "night people." Graduate students frequently turn to one another for assistance and there is occasional discussion with faculty members.

E. Outdoor Areas

Students read outdoors for the pleasant surroundings or simply for convenience. It is used mainly for light studying or reviewing rather than for serious work. Very few outdoor areas on college campuses have been specifically landscaped for studiers. This means that the students have had to make do with what is available. There is a real need for specifically designed outdoor spaces. There should be tables with clips or other devices to keep material from blowing away. We have written an article for landscape architects dealing with design problems.

It seemed noteworthy that most students went outdoors for positive reasons--the quest for a more pleasing and varied environment--rather than a negative desire to escape something noxious. The distractions of outdoors were largely from other people and were similar to those found in other study settings.

F. Implications

To learn the ingredients of a suitable study environment is one matter, to feed back this information to people who can apply the knowledge is another. Throughout the project I have been concerned with the ways of reaching designers and space managers. I would like to emphasize particularly the role of space managers--housing officials, librarians, food service people, and registrars--in developing and maintaining good study conditions. They play a central role in maintaining classrooms and cafeterias for evening study. Furthermore, their opinions are given great weight in designing study facilities. The writer has worked with architects on many occasions and it has become very apparent that it is also necessary to reach the space managers with accurate information on the connection between architecture and educational programming. Designers by themselves cannot create adequate study environments if their goals are not shared by educational administrators.

At the inception of the project, the writer had intended to devote a full year to getting the results into the hands of administrators and educators. It seemed that this could be done best by personal visits and face-to-face discussion. Simply to send a librarian the complicated survey data--tables containing hundreds of percentages--might do more harm than good. Unfortunately

budgetary limitations prevented such site visits and personal discussions. In lieu of this, I have attempted to write a number of articles for librarians, residence hall managers, and others who administer educational spaces with the idea of stimulating further thought about study conditions. I have been heartened by the enthusiastic response shown by these officials. As an example, the editor of Landscape Architecture was exuberant by the idea of assessing outdoor spaces from the standpoint of user behavior--something he has wanted to have done for years. Librarians too are aware of the contribution that social scientists can make to improve library areas. I have no illusions that we have found definitive answers to the most pressing questions in this area. In a time of rapidly changing technology and organization, there are no definitive answers to the question "What makes a good study environment?" Yet on the positive side, we have assessed many sorts of existing facilities and found how they affect the users. If this can encourage other people--librarians and residence hall managers as well as social scientists--to learn more about study conditions on their own campuses, this would be a long step forward. The questionnaires we developed proved very adequate for our purposes. My hope is that the instruments themselves will have some heuristic value in research into educational spaces.

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*These articles are based in whole or part on the findings of this Project.

11. Tables and Appendices

Table 1

Reasons for Studying in the Library

	Average % of students at 16 colleges and universities N = 1563
Quiet	51
Convenience or proximity	29
Materials	27
Atmosphere conducive to study	21
Few distractions, little movement	20
Concentrate better	10
Can relax or be comfortable	6
Group study, friends nearby	4
Not crowded, privacy	3
Habit	2
Physical Factors	
Temperature good	5
Well-lit	4
Tables, desks comfortable or good for study	4
Space to spread out materials	3
Chairs comfortable, good for study	2

Table 2

Ratings of Specific Aspects of Library Environment
(1112 Students at 16 Colleges and Universities)

Item	Percentages of Ratings		
	Excellent	Satisfactory	Needs Improvement
Lighting	50	40	10
Ventilation	32	48	20
Temperature	23	47	30
Comfort of chairs	24	57	19
Table height	37	56	7
Table size	34	56	10
Access to educational material	30	52	18
Atmosphere for study	22	50	28
Ease of concentration	15	55	30
Quietness	12	44	44
Possibility for privacy	18	45	37
Possibility for relaxing	17	49	34
Space to spread out materials	24	52	25
Possibility of talking	22	53	25
Pleasantness of surroundings	33	56	11
Arrangement of tables	25	63	12
No. of carrels	18	38	44
Windows	35	55	10
Ceiling height	42	55	3
Color of walls	31	56	13
Floor covering	35	53	12
Room size	31	56	13
Snack facilities	12	35	53
For smokers only: smoking	5	34	61

Table 3

Comparison of Library and Residence as Study Places
(1173 Students at 11 Colleges and Universities)

	Average % of students who believe:			
	Residence is Better	Library is better	No Difference	Does not Apply
Lighting	4	71	23	2
Ventilation	19	43	35	3
Temperature	24	40	34	2
People moving around	49	37	11	3
People talking	33	54	11	2
Noises (other than people talking)	22	64	12	2
Nearness to reference materials	4	90	5	1
Atmosphere conducive to study	10	76	13	1
Privacy	61	23	12	4
Possibility of relaxing	81	7	8	4
Space to spread out materials	38	33	27	2
Comfortable furniture	49	22	27	2
Ease of concentration	16	65	18	1
Snack facilities	72	4	12	12
Pleasant surroundings	29	21	40	10

Table 4

Library-Residence Comparison made by

Residence and Library Studiers

	Per cent of students who believe that the library is a better study place	
	Students interviewed in the Library N = 1173	Students interviewed in their Residence N = 216
Lighting	72	52
Ventilation	41	19
Temperature	39	18
People moving around	37	29
People talking	53	57
Noises other than talking	63	66
Nearness to reference materi	90	79
Atmosphere conducive to study	76	47
Privacy	24	11
Possibility of relaxing	7	1
Space to spread out materials	34	10
Comfortable furniture	22	8
Ease of concentration	65	27
Snack facilities	4	2
Pleasant surroundings	22	4

Table 5

Major Distractions for Library Patrons

(288 students at 7 colleges and universities)

	Number of times mentioned:	
	#1 distraction only	Total of times Checked 1-5
People coming in and out	63	217
Other students talking	60	190
Thinking of other things	38	187
Noises other than talking	24	121
Too many people/friends nearby	15	85
Too hot/too cold	12	49
Watching other people in the room	11	142
Library staff talking	9	42
Uncomfortable furniture	8	50
Not being able to relax	4	67
Limited library material	4	35
Poor ventilation	3	24
Poor lighting	2	19
Not being able to smoke	1	23

Table 6

Reasons for Studying in Carrels and Other Library Areas

	Per cent of students mentioning item	
	Carrel Studiers N = 103	Students in all Other Areas N = 1457
Materials	9	26
Quiet	37	23
Not crowded, privacy	39	18
Few distractions, little movement	47	14
Group study, friends	2	14
Convenience, proximity	3	13
Habit	4	13
Can relax, be comfortable	3	7
Concentrate better	20	2
Physical Factors		
Well-lit	4	4
Windows	2	4
Tables/desks comfortable, good for study	7	4
Temperature good	1	3

Table 7

The Relationship between the Activities of

Two Physically-Present Room-Mates

	Room-Mates Situation	
	Studying	Not Studying
Double Rooms		
When the person was studying at the time of the interview	255	94
When the person was not studying	91	157
Apartments--Both in same room		
When the person was studying at the time of the interview	46	13
When the person was not studying	17	62
Apartments--Each in separate rooms		
When the person was studying at the time of the interview	17	16
When the person was not studying	3	14

Table 8

The Relationship between Studying and the Presence or Absence of a Room-Mate

	Phi coefficient between a person studying and his:	
	Room-mate's presence or absence	Room-mate's studying or not studying
Double Rooms	.04	.36**
Apartments - Same room	-.08	.56**
Apartments - Different rooms	.14	.33*

Table 9

Disadvantages of Studying Outdoors

Disadvantage	Per cent of 342 respondents mentioning this reason
Distractions, too much movement	20
People talking	13
Noise other than talking	11
Unable to concentrate	6
Too hot or too cold	5
Unable to relax, uncomfortable	4
Poor lighting (sun glare)	4
Atmosphere not conducive to study	3
Bugs, dogs	3
No space to spread out materials	2
Windy	2

Table 10

Advantages of Studying in Various Locations

Advantage	Per cent students mentioning this reason Place where student was interviewed Library N = 434	Residence N = 946	Cafeteria N = 444	Lounge N = 55	General Classrooms N = 66	Specialized Labs N = 107	Outdoors N = 342
Quiet	53	30	14	29	87	54	20
Materials	46	15	0	4	0	56	0
Few distractions, little movement	21	4	2	9	59	24	4
Atmosphere conducive to study	19	1	3	5	9	4	0
Convenience, proximity	16	26	39	22	14	18	35
Not corwded, privacy	15	11	1	11	42	19	9
Can relax, comfortable	10	28	17	42	17	10	19
Concentrate better	9	2	2	2	3	2	1
Group study, friends	7	5	26	25	18	19	17
Habit	4	5	1	2	1	0	0
Snack	0	1	56	7	8	8	8
Smoke	0	1	19	4	9	4	4
Some noise or activity	0	0	22	24	2	5	0
Physical Factors							
Well-lit	14	2	3	5	18	10	1
Temperature good	12	2	11	5	11	5	30
Furniture comfortable or good for study	5	2	3	8	18	9	6
Space to spread out materials	4	1	2	0	11	5	1
Spaciousness of the room	3	0	3	0	6	9	-
Attractive surroundings							44
Sun							27
Fresh air							16

DATE TIME

DORM Room No. # of OCCUPANTS

PEOPLE PRESENT DOOR OPEN OR CLOSED

PERSON'S LOCATION

Are you studying now?

If yes, why did you choose to study in this room at this time?

Are there any disadvantages to studying here? What are they?

Why are you studying at this particular place in your room?

Are there any disadvantages? What are they?

If no, are you planning to study later today?

Where?

Why do you study there?

Are there any disadvantages to studying there?

Where is your roomate now?

Is (he) (she) studying?

If yes, why is (he) (she) studying there?

#66-10

YEAR_____ GPA_____

DO YOU SMOKE?

DATE TIME PLACE

I am a student at U.C., Davis, and I am working on a project designed to learn about study habits.

1. Can you please, in the space below, tell why you chose to study in the library at this time rather than studying somewhere else.

2. Why did you choose to study in this particular <u>part</u> or <u>area</u> of the library?

Are you a full-time student? (If so, what is your class?_____)

_____ part-time student, _____ faculty, other (specify) _____

Do you smoke? _____

Thank you. Could you please leave this form in the designated box at the exit stand as you leave.

66-11

DATE TIME PLACE

I am a student at U.C., Davis, and I am working on a project designed to learn about study habits.

Could you please rate each item by checking the appropriate column. If you feel some improvement should be made, also specify what type of improvement. This can be extremely helpful in making positive changes and improving the library as a study area.

	Excel-lent	Satis-factory	Need Minor Improve.	Need Major Improve.	What Improvement Is Needed?
Lighting					
Ventilation					
Temperature					
Comfort of Chairs					
Table Height					
Table Size					
Access to Educational Material					
Atmosphere for Study					
Ease of Concentration					
Quietness					
Possibility for privacy					
Possibility for Relaxing					
Space to Spread out Materials					
Poss. of Talking with Others					
Pleasantness of Surroundings					
Arrangement of tables and book stacks, etc.					
~~Circulation~~					
No. of Indiv. Study Spaces (carrels)					
No, size, & placement-Windows					
Ceiling Height					
Color of the Walls					
Floor Covering					
Room Size					
Snack Facilities					
For Smokers Only: Smoking					

If you are a full-time student, what is your class (fresh, soph, etc.)_____

If not a full-time student, are you a part-time student_____, faculty member _____, other (specify)_____.

Do you smoke? Yes _____ No_____

#66-12

DATE TIME PLACE

I am a student at U.C., Davis, and I am working on a project designed to learn about study habits.

Could you please, in the space below, tell why you chose to study in this particular place at this time. What specifically do you like about this place, and are there any disadvantages in studying here?

Are you a full-time student? If so, what is your class (fresh., soph., etc.)

_____

If not, are you a part-time student _____, faculty _____, other _____?

Do you smoke? _____(Yes) (No)

Thank you. Could you please leave this form in the designated box at the exit as you leave.

66-15

DATE TIME PLACE

I am a student at U.C., Davis, and I am working on a project designed to learn about study habits.

How does studying in the library compare with studying where you live? Please place a check in the appropriate column for each item.

	residence is better	library is better	no difference	does not apply
Lighting				
Ventilation				
Temperature				
People Moving Around				
People Talking				
Noises (other than people talking)				
Nearness to Reference Materials				
Atmosphere Conducive to Study				
Privacy				
Possibility of Relaxing				
Space to Spread out Materials				
Comfortable Furniture				
Ease of Concentration				
Snack Facilities				
(For Smokers Only) Smoking				
Pleasant Surroundings				

Are you a _____ full-time student (if so, what is your class _____),
_____part-time student, _____ faculty, or other (specify) _____.

Where do you currently live?
___ at home with parents
___ at home with own wife or husband
___ in dorm (how many roommates _____)
___ in fraternity or sorority house
(how many in room beside yourself _____)
___ in apartment (how many roommates _____)
___ in private room (how many roommates _____)
___ Other, please specify _____

Do you smoke? _____(Yes) _____(No)

66-16

Thank you. Could you please leave this form in the designated box at the exit, as you leave.

DATE TIME PLACE

I am a student at U.C., Davis, and I am working on a project designed to find out more about study habits.

In the space below, could you please give a precise description of where you are sitting in the library. (Ex.: Individual desk facing the wall furthest from the entrance. Surrounded by book stacks on the right and tables on the left.)

In this position I am most distracted by: (Please rank the five elements of the list below that are most disturbing to your studying at this time - number 1 being most disturbing.)

_____People coming in and out

_____Other students talking

_____Library staff talking

_____Noises other than talking (Please specify:

_____Too many people and/or friends close by

_____Not being able to smoke

_____Poor lighting

_____Poor ventilation

_____Too hot, too cold (Specify which

_____Thinking of other things

_____Limited library material

_____Not being able to relax

_____Uncomfortable furniture (Please specify:

_____Not being able to eat

_____Watching other people in the room

_____Distractions (Please specify:

_____Other (Please specify:

If you are a full time student, what is your class (fresh, soph,) _____? If not, are you a _____part-time student, _____faculty member, _____other (Specify:

Do you smoke? _____ (yes or no)

66-17

Thank you. Would you please leave the questionnaire in the designated box at the exit when you leave.